



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

National Academy of Sciences.—This body met in Washington, D. C., April 17th. The following papers were read. I. Histological Characteristics of Certain Alpine Plants, G. L. Goodale. II. Corrosions by Roots, G. L. Goodale. III. An Investigation of the Aberration and Atmospheric Refraction of Light, with a Modified Form of the Loewy Prism Apparatus, George C. Comstock (Presented by S. Newcomb). IV. Biographical Memoir of John Le Conte, Joseph Le Conte. V. The Coral Reefs of the Bermudas, A. Agassiz. VI. The So-called Serpulæ Reefs of the Bermudas, A. Agassiz. VII. The Bathymetrical Extension of the Pelagic Fauna, A. Agassiz. VIII. New Method of Determining the Relative Affinities of Certain Acids, M. Carey Lea. IX. On the Change of Young's Modulus of Elasticity with Variation of Temperature, as Determined by the Transverse Vibration of Bars of Various Temperatures, A. M. Mayer. X. On the Production of Beats and Beat-tones by the Covibration of two sounds, so high in pitch, that when separately sounded they are inaudible, A. M. Mayer. XI. On the Motions of Resonators and Other Bodies Caused by Sound Vibrations, with Experimental Illustrations; also a Reclamation, A. M. Mayer. XII. On Late Researches on the Variation of Latitude, S. C. Chandler. XIII. On the Infra-red Spectrum, S. P. Langley. XIV. The Bacteria of River Water, J. S. Billings. XV. The Influence of Light Upon the Bacillus of Typhoid, and the Colon Bacillus, J. S. Billings. XVI. Recent Gravity Instruments and Results, T. C. Mendenhall. XVII. The Geographical Distribution of Fishes, Theo. Gill. XVIII. Note on a Possible Increase in the Ultimate Defining Power of the Microscope, C. S. Hastings. XIX. The Internal Energy of the Wind, S. P. Langley.

No election of members was had. The Academy discussed a plan of division into classes without reaching a definite conclusion.

Natural Science Association of Staten Island, February 10, 1894.—Mr. William T. Davis exhibited specimens of the seventeen year locust found in various years since 1877, and read the following paper.

THE SEVENTEEN YEAR LOCUST ON STATEN ISLAND.

Our island will resound with the rattling song of the seventeen year Harvest fly or "Locust," during the latter part of next May and in

the month of June, and it may not be uninteresting in view of the fact, to give a short account of the species in connection with this locality. It must be borne in mind that while *Cicada septendecim* Linn. appears at intervals of seventeen years, its advent is not in the same year in all of the middle states, or in all the counties of this State, but that there are separate broods or colonies, that emerge in great numbers in districts of varying extent, the limits of which are not sharp or well defined. Thus it happens that while there is a certain brood that appears periodically on our island, and attracts at such times general attention, there are also other years when the *Cicada* occurs in small numbers. At such times it will often be found that a brood is emerging not many miles away, and that the island lies within the outer margin of the territory.

This matter of distribution and much more regarding the seventeen year *Cicada*, and the more southern thirteen year form, has been recorded by Professor Riley in Bulletin No. 8 of the U. S. Department of Agriculture, Division of Entomology. Professor J. A. Lintner, New York State Entomologist, also gives, in his second annual report, the distribution of the *Cicada* in this State, noting five broods as occurring within its limits.

In 1826 this *Cicada* appeared in great numbers on the island, as I have been informed by my grandmother; in 1843 they came again, as recorded by Thoreau, and still again in 1860 and in 1877. In the latter year I saw many tree trunks and fences brown with their cast pupa skins, and the whirl of their flight and monotonous song, could be heard in every direction. Dr. Fitch, in 1855, wrote of the seventeen year *Cicada* and records this brood as inhabiting the valley of the Hudson River. Since his time, the various broods in different parts of the country, have been numbered for convenience, and the one inhabiting the valley of the Hudson and Staten Island, is known as No. XII.

During the visitation of 1877, I noticed that many of the *Cicadas* were affected by the singular fungus *Massospora cicadina* Peck. While the insects were alive and walking about the fences and the tree trunks, if the abdomens of the infected individuals were suddenly jarred, they gave forth a cloud of innumerable spores. It has been stated that only injured specimens are attacked by this fungus, and then only toward the latter part of the season.

Since 1877, the seventeen year *Cicada* has not appeared on the Island in great numbers, and probably but few have been noticed except by those who have looked for them. The facts connected with

appearance, as far as known to me, may be arranged chronologically as follows :

1881, BROOD XVIII.

While collecting insects with Mr. Leng in the neighborhood of Watchogue, we found a red-eyed *Cicada* pupa under a stone, and on the 5th of June, eight specimens were collected, many of them being wet, having but recently emerged. By the 12th of June, they had become quite numerous, and I counted about one tree near Silver Lake, fifty-two pupa skins. The brood to which these insects belonged does not appear in great numbers in the east, but is mainly located in Wisconsin and the neighboring States. Staten Island, Essex Co., New Jersey, and Germantown, Penna., were apparently, the only eastern localities from which the insect was reported in 1881.

1885, BROOD XXII.

I made special search this year for the Periodical *Cicada*, as one of the most widely extended broods known, was to make its appearance. On the western end of Long Island in the neighborhood of Brooklyn, they came in some numbers, and also sparingly in New Jersey, the main body in the east, however, occurring in Pennsylvania and thence southwestward.

On the Island the insects must have been quite scarce. Mr. James Raymond and I, were walking along a wood-path in the Clove Valley on the 4th of July, when we found a wing that probably some bird had pulled off a red-eyed *Cicada*, as they so often do. To those who are acquainted with the character of the wings of this insect, their colors etc., this will constitute ample authority for its presence. In the autumn, an old pupa skin was collected, and the following April, another was found at South Amboy, New Jersey.

1888.

On the 16th of June while in the valley of Logan's Spring Brook I heard a *z-ing* in the distance like that produced by the seventeen year *Cicada*. As it stopped shortly and was not repeated the search was abandoned. Eight days later, when by the same brook the song was again heard, and this time followed to apparently the same tree from whence it came on the previous occasion. After some search the insect was detected on the under side of the limb, and captured. One of its fore wings was deformed so that it was unable to fly, and of course must have been born in the immediate vicinity. This was the only individual seen during this year.

1889.

Brood No. VIII was expected to appear in southern Massachusetts, on Long Island and in parts of Pennsylvania and West Virginia in the summer of 1889. It returned, according to a note in Vol. 1, No. 4, of the Proceedings of the Entomological Society of Washington, in considerable numbers in parts of North Carolina and West Virginia, and in less numbers in the District of Columbia, Maryland and New Jersey.

The only evidence that the seventeen year *Cicada* occurred on Staten Island in 1889, consists of a pupa skin found on a grass stem during the summer by Mr. Jos. C. Thompson, and kindly given to me.

1890.

During this year the *Cicada* was not expected to occur in any part of the country. In June and July, I found in a garden in New Brighton, three pupa skins, and my sister discovered one of the perfect insects on the trunk of a pear tree, but it was unfortunately destroyed by the family cat. Mr. Leng also found a red-eyed *Cicada* on an apple tree near the Moravian Cemetery, while he was "beating" for Longicorns.

On the 8th of September 1890, I found, in a hill of potatoes, a live red-eyed *Cicada* pupa, which I endeavored to rear, but without success.

1892.

On June 5th, I heard a seventeen year *Cicada* at West New Brighton, and the next day Mr. Leng's children caught me a specimen, and a few days later a second example. On the 11th of June there were many of the *Cicadas* singing in the high trees about Logan's Spring Brook, and on the 12th, I heard one near Rossville.

1893.

On June 11th, the *Cicadas* were fairly numerous in the woods along Willow Brook, and later in the month I heard them along Logan's Spring Brook. Mr. Leng's children also gave me two specimens from his garden at West New Brighton.

It is well-known that a few seventeen year *Cicadas* often make their appearance in the year previous to their general visitation, so that those collected in 1893, and even in 1892, may have been precursors of the general swarm which is to come early next summer, that is, seventeen years from the visitation of May and June, 1877.

March 10.—Mr. L. P. Gratacap exhibited pieces of a drift boulder containing fossils, and read the following paper :

ADDITIONS TO THE DRIFT FOSSILS OF STATEN ISLAND.

These specimens represent the remainder of one of the boulders found by Mr. Arthur Hollick, at Prince's Bay, last autumn, mentioned in our Proceedings for Nov. 11, 1893.

The rock is a lower Helderberg limestone, somewhat crystalline and shaly, and affords numerous fossils, conspicuous among which is *Strophodontia varistriata* var. *arata* Hall, a fossil brachiopod characterized by a very convex ventral valve and by prominent ribs, which are scored by numerous delicate striae, easily discernible under a low magnifying power. This fossil assumes some importance, in its numerical representation, in the lower Helderberg beds of Becraft's Mountain, east of the Hudson River, in Columbia Co., and the most easterly exposure of the Helderberg series of strata in New York State. It seems safe, from this fact, and a close lithological similarity in the material of the boulders with the Becraft stone, to conclude that this "wanderer" commenced its travels southward from that distant point. Associated with it are a few lamellibranchs, which are seen less commonly in our drift material, and were actually less important elements in the Helderberg Sea. These are *Pterinea communis* Hall, *Pterinopecten bellula* Hall, and *Aviculopecten umbonata* Hall, all new to the Island. Upon one of these *Pterinea communis* there is the half effaced trace of a pygidium or tail of *Lichas bigsbyi* Hall, a trilobite and a not common species, usually found in separated heads and tails. Its identification as *Lichas* is unquestionable, but in the complete absence of any considerable evidence, from the poor nature of the specimen, it is not certainly separated from *L. pustulosus*. If *bigsbyi*, as is probable, it also indicates Becraft's Mountain as its origin. Amongst the brachiopodous remains in these fragments we find *Rensseleria mutabilis* Hall, *Meristella bella* Hall, and *Orthis eminens* Hall, all new in our Island finds. Besides these molluscs there are seen, in these fossil remains, plain and broad sheets, or fronds, of the bryozoan *Lichenalia*, showing both the poriferous and non-poriferous surfaces. The species I am unable at once to determine. Besides this there is a fenestrated polyzoan, *Fenestella æsyle* Hall, as far as I can fix on its specific nature. The heteropod *Platyceras gebhardii* Hall is another new species, although this reference may be doubtful, as in this genus of shells the species run insensibly into each other and the present multiplication of these specific names seems provisional.

Amongst these specimens are two Oriskany sandstone species, *Rensseleria ovalis* and *Platyceras nodosus*, which were detached by Mr. Hollick from the same boulder which yielded the Helderberg fossils. This places the rock in the upper Lower Helderberg strata, probably the Upper Pentamerus beds, and exhibits the faunal emergence of the life of the Oriskany Ocean. This find illustrates still further, if illustration was necessary, the paleontological importance of our drift material and provides additional incentives to further investigation.

Mr. Thomas Craig exhibited a living myxomycete under the microscope and read the following paper:

SOME OBSERVATIONS ON THE BEHAVIOUR OF A MYXOMYCETE.

In Bennett and Murray's book on Cryptogamic Botany mention is made of this form of life as the sixth sub-division. It is placed between the fungi and the protophyta; but at the end of their description they say: "We are justified in placing these organisms outside the limits of the vegetable kingdom."

Dallinger, in his edition of Carpenter on the Microscope, places them in the animal kingdom, in close affinity with the rhizopods. Saville Kent, after prolonged investigation placed them in the animal kingdom. All these writers follow DeBary, who in 1859 first published the result of his researches, and his conclusions that they were more nearly allied to animals than plants. DeBary's conclusions were fully confirmed by Saville Kent, who traces the development as follows: Suppose the existence of a sporangium; this bursts and liberates the spores which in presence of water give birth to a globular protoplasmic body, which becomes after a time a flagellate infusorian, capable of ingesting solid food. It then loses its flagellæ and becomes an *Amœba*. Two of these conjugate and attract a number of other like bodies, or become joined to them in some way not understood. These form what is known as a plasmodium, a portion of which I exhibit under the microscope. This plasmodium is capable of apparently voluntary motion. It goes forward and retreats by a flowing motion, carrying embedded in its substance various species of algae which it has captured as food. There is a remarkable resemblance in the mode of movement between the myxomycetes and the proteomyxa. The same flowing motion of the protoplasm and the joining of the filaments to form larger ones.

The reason for the foregoing prelude is that during the month of February I have been watching one of the myxomycetes—which has developed in some water taken from the Old Town pond—into what

may be called its animal stage. In the glass jar in which it is growing it resembles a miniature tree of many branches, flattened against the glass. Before it made its appearance the glass jar was so covered with growth of algae that one could not see through it. As soon as the myxomycete made its appearance and had travelled a short distance, the glass on that part over which it passed was comparatively clear. Now that the myxomycete has gone several times round the jar, the glass is quite transparent. I took some measurements of its rate of progress.

On Feb. 26, from 2.15 p. m. to 8.45 p. m. it had travelled $1\frac{1}{4}$ inches.

Feb. 27, at 9 p. m. the distance covered was $6\frac{1}{2}$ inches.

Feb. 28, at 9 p. m. $10\frac{1}{4}$ inches.

March 1, at 9 p. m. $15\frac{1}{4}$ inches.

So you will observe the rate of progress is not uniform, but the average rate of progress was 5-26ths inch per hour. A curious circumstance is that while the plant life disappears in all parts of the glass over which the myxomycete moves, it does not seem to interfere with the animal life on the glass. There are a large number of the brown *Hydra* and numerous small worms, which do not appear to be affected in any way, although they are surrounded by the plasmodium of the myxomycete.

I have not been able to definitely name the species, owing to the absence of the sporangium, but from figures I have seen it resembles *Didymium serpula*. Of course in the foregoing there is nothing very new, but having been fortunate enough to get so fine an example, so favorably located for examination, I thought it might interest some of the members to see under the microscope, an object about which so many diverse views have been held by botanists and zoologists. Apparently the only reason for the botanical claim to it is the fact that in its reproductive stage it forms sporangia like some of the fungi, while on the other hand, from its first appearance in the water or in damp places it acts precisely like an animal in its mode of progress and its way of taking in and digesting solid foods.

MISCELLANEOUS MATERIAL EXHIBITED.

Mr. L. W. Freeman presented a mastodon's tooth, obtained from Staten Island Sound by Mr. Seeley Van Pelt, while tonging for oysters. Its value was not understood by the finder, who allowed it to be thrown away with the refuse oyster shells, into Old Place Creek, from whence it was recovered by Mr. Freeman.

Boston Society of Natural History, March 7.—The following papers were read: Mr. F. P. Gulliver, The Newtonville sand plain; Mr. J. B. Woodworth, Some typical eskers of southern New England.

April 4th.—The following paper was read. Prof. F. W. Putnam: The department of ethnology at the World's Columbian Exposition.

SAMUEL HENSHAW, *Secretary*.

The Biological Society of Washington, March 10.—The following communications were read: Mr. C. H. Townsend, The Ornithology of Cocos Island in its Relation to that of the Galapagos Archipelago; Mr. B. T. Galloway, A Hexenbesen of *Rubus*; Mr. M. B. Waite, The Hexenbesens of Washington and Vicinity. Illustrated with lantern slides.

March 24.—The following communications were read: Dr. Theobald Smith, On the Significance of Variation among Species of Pathogenic Bacteria; Mr. Vernon Bailey, On some Bones from a Cave in Arizona; Mr. C. D. Walcott, On some Appendages of the Trilobite; On the Occurrence of Fossil Medusæ in the Middle Cambrian Terrene.

April 7.—The following subject was discussed. What is a Living Cell?

FREDERIC A. LUCAS, *Secretary*.